United States Department of Agriculture

Animal and Plant Health Inspection Service

Program Aid No. 1301

Pseudorabies in Swine

History

Pseudorabies, also known as Aujeszky's disease, "mad itch," and infectious bulbar paralysis, has been in the United States for more than 150 years. An affliction called "mad itch in cattle" was reported in March 1813 in the American Farmer magazine.

The author says, in part: "An observing farmer noticed in one of his cows, an unusual propensity for rubbing her nose and side of her head against every hard substance that came within reach. . .So far as I hear, in every instance it has proven fatal. The disease appears to be in some measure contagious as there is one instance of a dog being attached, who was known to have eaten a cow recently dead with the complaint. In a few hours the dog died."

In 1902, Dr. Aladar Aujeszky, working in Hungary, was the first person to describe the disease in the scientific literature. He observed its natural occurrence in cattle, cats, and dogs, and transmitted the virus experimentally to rabbits.

Dr. R. E. Shope, Ames, Iowa, established in 1931 that "mad itch" occurring in the United States was the same disease that Aujeszky had described. He found that the virus was serologically identical to Aujeszky's Hungarian strain of pseudorabies virus.

Pseudorabies has become a threat to the U.S. swine industry. For many years losses in swine were rare, although swine were recognized as carriers and the source of virus for the deadly "mad itch" in other species. Significant losses in swine were first reported in Europe in the 1950's and in this country in the early 1960's.

What is pseudorabies?

Pseudorabies is principally a disease of swine caused by a herpes virus. Swine are the only known reservoir and the prime spreaders of the disease.

The herpes virus family to which pseudorabies belongs is extensive, and most animal species are afflicted by one or more diseases caused by a herpes virus. In humans, herpes viruses cause fever blisters, cold sores, genital herpes, chicken pox, and shingles. The pseudorabies virus, however, does not affect man and the higher apes.

Pseudorabies is occasionally transmitted from swine to cattle, sheep, dogs, cats, and wild animals, where it causes encephalitis, intense itching, self-mutilation, and death. Because sudden death is the rule, these animals play a limited role in the spread of the disease.

Symptoms in swine vary from an inapparent infection to sudden death. Severity is dependent on the age and immune status of the hogs, virulence of the viral strain, dose of virus, and presence of concurrent infections.

How prevalent is the disease?

Pseudorabies has been reported in most countries of the world, although scant data are available on its prevalence. Losses have been particularly significant in Eastern Europe. The disease has not been reported in Australia or Canada.

In the United States, random surveys conducted at slaughter plants showed that the infection rate was 0.56 percent in 1974; it rose to 3.73 percent in 1977-78, 8.39 percent in 1980-81, and 8.78 percent in 1983-84. Infection rates reported in the last two surveys are significantly higher partly because many of the hogs tested were vaccinated. Infected hogs could not be differentiated from vaccinated swine with the vaccines and tests available at that time.

What are the clinical signs in swine?

One of the insidious aspects of pseudorabies is that it may be present in a herd without showing clear clinical signs. Symptoms may be overlooked or mistaken for other diseases, especially in herds with some immunity and no young pigs present.

Pigs under 3 weeks of age may show loss of appetite, incoordination, depression, vomiting, nervousness, diarrhea, and convulsions, often followed by death of the entire litter.

In older pigs, signs may include fever, loss of appetite, coughing, sneezing, pneumonia, convulsions, and occasionally blindness. In sows, one may see reproductive problems, including abortion and stillborn or mummified pigs.

What are the signs in other animals?

In other species, clinical signs are usually more consistent and severe. Any of the signs listed for swine may be apparent.

The most common clinical signs in cattle and sheep are incessant scratching to the point of self-mutilation continuing until death, hence the name "mad itch." Signs resembling rabies also are common, hence the name "pseudorabies." These signs include grinding the teeth, excess salivation, bellowing, and excitement. Death usually occurs within 48 hours of the first signs of disease.

Do all exposed hogs show symptoms of the disease?

No. If sows were previously infected, their milk contains antibodies that protect the piglets during the critical early weeks. Protection by maternal antibodies gradually subsides, and pigs become susceptible between the ages of 10 and 16 weeks. Infections at this stage are frequently subclinical.

In older hogs, clinical signs may be absent, or flu-like symptoms may occur. Clinical signs are most prominent when infection is introduced into a susceptible herd while sows are farrowing. Since other species always show visible signs, a dead dog, cat, or raccoon near swine may be the first indication that a herd is infected.

How does the disease progress?

Onset of pseudorabies depends on the species and age of the animals involved. In piglets and in species other than swine, symptoms may occur within 1 to 2 days after exposure. In older swine, symptoms may first appear after about 30 hours or later.

In surviving swine, symptoms usually disappear within 10 to 14 days. Recovered swine frequently become chronically infected for extended periods, and as many as 20 percent of the sows in a recently recovered herd may fail to conceive at the next breeding. For practical purposes, recovered swine are considered potential virus shedders for the rest of their lives.

As of now, there is no scientific explanation as to how a persistent infection becomes established in a herd. The current practice of concentrating large numbers of swine in a relatively small space seems to help maintain pseudorabies in a herd, and the disease usually persists until an active cleanup program is undertaken.

When should swine be tested for pseudorabies?

Testing is required to determine whether individual swine and entire herds are infected with pseudorabies. Testing, therefore, becomes the basis for cleaning up individual herds, establishing that a community is free of the disease, and preventing new outbreaks.

Producers should follow the testing requirements of their State as well as Federal regulations on the interstate movement of swine. Swine, including breeding stock and feeder pigs, should not be introduced into a clean herd unless their pseudorabies status is known. Breeding animals should be isolated after purchase and should not be added to the rest of the herd until they have been treated.

During herd cleanup, it frequently is necessary to test the entire breeding herd several times. Testing ensures that all animals carrying the virus have been eliminated.

For what other diseases is pseudorabies mistaken?

Pseudorabies can be mistaken for transmissible gastroenteritis, pneumonia, and viral encephalitis. It also can be mistaken for influenza, rabies, and porcine enterovirus infections.

How does the disease spread?

Swine usually become infected from exposure to other swine that are shedding pseudorabies virus.

Less common sources of infection are:

- Exposure to infected wildlife, other domestic animals, or rodents.
- Eating the carcass of an infected animal.
- Ingesting feed, water, and straw contaminated with the virus.
- Contact with contaminated equipment, including boots, clothes, trucks, tractors, and anything that may have been exposed to the virus.
- Breathing air contaminated by nearby infected swine.

Should hogs be vaccinated against pseudorabies?

Vaccines have their place in protecting swine against catastrophic losses, particularly in herds that are free of pseudorabies but are located in an area where the virus is known to be present. In clinical outbreaks, vaccines shorten the course of the outbreak and reduce losses from sickness and death. Vaccinated hogs that become infected shed less virus for less time than similarly exposed, nonvaccinated swine.

Unfortunately, vaccines complicate the process of determining if swine are infected. New vaccines and companion tests now under development may permit accurate diagnosis of infection in vaccinated swine. Most State laws restrict the use of pseudorabies vaccines to varying degrees.

Can spread of the disease be controlled?

Yes. The virus can be killed fairly easily with heat, sunlight, drying, and disinfectants. The most effective approach is to not just clean up individual herds, but to work on an entire community.

State and Federal officials are cooperating with the swine industry to control and eradicate pseudorabies. The effort is carried out with the help of "accredited veterinarians," who are approved for working with federally assisted disease control programs. They have the training, knowledge, and expertise to comply with applicable regulations and to prescribe cleanup practices suited to the herd type, facilities, and management practices of the farm.

What can individual producers do to help?

All swine producers need to cooperate to keep pseudorabies from becoming a bigger problem. Individual producers should become aware of the pseudorabies program in their State and take an active part in the control and eradication of this disease.

Specifically, producers should:

- Properly dispose of all dead animals, so that they are not accessible to dogs and cats and wildlife.
- Follow State and Federal pseudorabies control regulations. Most States now require a pseudorabies test before sale. Insist on this test. Always isolate newly purchased breeding swine for 30 days and retest before mingling them with the rest of the herd.
- Isolate infected swine.
- Immediately report suspected pseudorabies to an accredited veterinarian or to a Federal or State animal health official.

☆ U.S.G.P.O.: 1989- 620-409/00766

Revised February 1989